

<p><i>Duke Global Health Institute</i></p> <p><b>One Health: Introduction to Environmental Health</b></p> <p>Summer 2017, 3 Credit Hours</p>
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**Course Overview**

<b>Date</b>	<b>Time</b>	<b>Topic</b>
Monday, June 5, 2017	8:30am-12:00pm	Course Overview & Introduction to Environmental Health
Monday, June 5, 2017	1:00pm-5:00pm	Major Sources of Environmental Health Risks
Tuesday, June 6, 2017	8:30am-12:00pm	Toxicology
Tuesday, June 6, 2017	1:00pm-3:30pm	Risk Assessment, Management and Communication
Tuesday June 6	3:30-5:00	Solid Waste Management
Wednesday, June 7, 2017	8:30am-12:00pm	Emerging Infectious Diseases
Wednesday, June 7, 2017	1:00pm-5:00pm	Water and Sanitation
Thursday, June 8, 2017	8:30am-12:00pm	Food Safety
Thursday, June 8, 2017	1:00pm-5:00pm	Climate Change and Environmental Health: Documentary "Last Stop at the Oasis"
Friday, June 9, 2017	8:30am-12:00pm	Student Debates
Friday, June 9, 2017	1:00pm-4:00pm	Course Wrap-Up & Exam

**Instructor Information**

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**Course Description**

This course provides a comprehensive overview of the major topic areas in Environmental Health. In this review, the course examines major sources of environmental health risks, including microbial, chemical, and physical agents in natural and anthropogenic environments. The course also covers topics of toxicology, risk

assessment and management, water and sanitation issues, infectious diseases, solid waste management, food safety, as well as emerging topics. During the course the students will further explore a selected topic and present their findings to the class in a debate style format and complete a term paper.

### **Course Pre-requisites**

One of the following courses (or equivalent):

- General Microbiology
- Environmental Science or Earth Science

### **Course Objectives and/or Goals**

After completing this course, the student should be able to:

- Define the major sources of environmental health risks from diverse environmental media (water, air, soil/sediments);
- Understand and characterize methodologies to study toxicology and ecotoxicology;
- Understand and characterize methodologies and approaches to understanding and managing risks to health and the environment;
- Understand and describe major factors that determine environmental health risks relevant for: water and sanitation, solid waste, food safety, and emerging health topics.

### **Course Materials**

- See syllabus for suggested reading materials

### **Course Requirements/Evaluation**

Students will be evaluated according to the following (Total points = 500):

Class participation	(20%) (100 points)
Student group presentations	(20%) (100 points)
Exam	(30%) (150 points)
Term paper	(30%) (150 points)

**Class participation:** Students are expected to be present, participate in group discussions, and ask active questions during the course.

**Student group debate presentations:** In order for the students to explore a topic in more depth and interact with other students, students will form groups, explore a topic related to environmental health, and present their findings in class. Group size should be 3-4 students. Student groups will be able to select their own topic from a menu. All students in the same group should participate in the presentation made during class, and all students within a group will receive the same grade.

**Exam:** A 90-minute, open book, open note exam will cover the material that was presented in class. The exam will consist of a variety of question types, including multiple-choice, fill-in-the-blank, true/false, and short answer.

**Term paper:** A 7-10 page paper will be developed and written independently by each student. The topic of the term paper will be assigned during class. After the completion of the course, the students will work on the term paper over the course

of a month and submit the term paper on an agreed-upon date as communicated by the instructor during the course.

**Grading**

The following table presents an overview of the grading scheme used in the course

Percentage or points earned in class	93%-100%	90%-92%	87%-89%	83%-86%	80%-82%	77%-79%	73%-76%	70%-72%	Below 70%
Letter Grade equivalent	A	A-	B+	B	B-	C+	C	C-	E

Letter Grade	A	A-	B+	B	B-	C+	C	C-	F	NC
Grade Points	4.0	3.7	3.3	3.0	2.7	2.3	2.0	1.7	0.0	0.0

For greater detail on the meaning of letter grades and university policies related to them, see <https://registrar.duke.edu/student-records/how-calculate-gpa>

**Topical Outline**

Date	Time	Topic	Background Reading
Monday, June 5, 2017	8:30-9:30am	Welcome, Course introduction	Course syllabus
	9:30-11:30am	Introduction to Environmental Health	
	11:30am-12:00pm	Questions and Discussion	
	12:00-1pm	Lunch	
	1:00-1:30pm	Debate topics introduced	
	1:30-2:30	Major Sources of Environmental Health Risks – chemical and physical	WHO priority environment and health risks <a href="http://www.who.int/heli/risks/en/">www.who.int/heli/risks/en/</a>
	2:30-2:45	Break	
	2:45-3:45	Major Sources of Environmental Health Risks – microbial	
	3:45-4:30	Major Sources of Environmental Health Risks – emerging agents	
4:30-5pm	Day 1 Wrap-Up and Discussion		
Tuesday, June 6, 2017	8:30-8:45am	Welcome and Feedback from Day 1	
	8:45am-9:45am	Toxicology - Fundamental Principles	<a href="http://www.toxicologyschools.com/Free_Toxicology_Course1/a21.htm">http://www.toxicologyschools.com/Free_Toxicology_Course1/a21.htm</a>  Vandenberg et al., 2009; Cerrillo et al., 2017
	9:45am-10:00am	Break	
	10:00-12:00pm	Toxicology - Methodologies and Approaches	
	12:00-1pm	Lunch	

## One Health: Introduction to Environmental Health– June 2017

Date	Time	Topic	Background Reading
	1:00-2:00pm	Risk Assessment	Koppers document
	2:00-3:00pm	Risk Management and Communication	Peter Sandman video
	3:00-3:30pm	Break	
	3:30-4:30pm	Solid Waste Management	Guerrero et al 2012
	4:30-5pm	Day 2 Wrap-Up and Discussion	
Wednesday, June 7, 2017	8:30-8:45am	Welcome and Feedback from Day 2; Discuss topics and questions for student presentations	Course syllabus
	8:45-10:15am	Emerging Infectious Diseases	Kindhauser et al., 2016; Tanwar et al., 2014
	10:15-10:45am	Break	
	10:45-12:00pm	Emerging Infectious Diseases	
	12:00-1:00pm	Lunch	
	1:00pm-3:00pm	Water, Sanitation, and Hygiene	Suggested website: WHO sanitation and health: <a href="http://www.who.int/water_sanitation_health/en/">http://www.who.int/water_sanitation_health/en/</a> Publication: Liu et al., 2015
	3:00-3:20pm	Break	
	3:20-4:00pm	Day 3 Wrap-Up and Discussion	
	4:00-5:00pm	Student Preparation for debate presentations	Course Syllabus
	<i>After class: Student work on Case study / Prepare for Exam</i>		
Thursday, June 8, 2017	8:30-8:45am	Welcome and Feedback from Day 3	Course Syllabus
	8:45-11:00am	Food Safety – Sources of contamination and control	Braden and Tauxe 2013; Erickson and Doyle 2017
	11:00-11:20pm	Break	
	11:20-12:00	Food Safety – Emerging Topics	Martirosyan and Schneider, 2014
	12:00-1:00pm	Lunch	
	1:00pm-2:30pm	Climate Change and Environmental Health: Excerpts of documentary "Last Call at the Oasis" and class discussion	Report: Human Health Perspective on Climate Change
	2:30-2:50pm	Break	
	2:50-3:30pm	Day 4 Wrap-Up and Discussion	
	3:30-5:00pm	Students work on debate presentations	Course Syllabus
		<i>After class: Student work on Case study / Prepare for Exam</i>	

Date	Time	Topic	Background Reading
Friday, June 9, 2017	8:30-8:45am	Welcome and Feedback from Day 4	
	8:45-10:45 am	Student debate presentations	
	10:45-11:00	break	
	11:00-12pm	Student debate presentations	
	12:00-1:00pm	Lunch	
	1:00-2:00pm	Course Wrap-Up	
	2:00-4:00pm	Exam	
		Term Paper due	
Date TBD			

### **Duke Honor Code**

Duke University is a community dedicated to scholarship, leadership, and service and to the principles of honesty, fairness, respect, and accountability. Citizens of this community commit to reflect upon and uphold these principles in all academic and non-academic endeavors, and to protect and promote a culture of integrity. To uphold the Duke Community Standard:

- I will not lie, cheat, or steal in my academic endeavors;
- I will conduct myself honorably in all my endeavors; and
- I will not act if the Standard is compromised.

Students are encouraged to review the Duke Honor Code:

(<http://www.integrity.duke.edu/new.html>)

### **Plagiarism**

Plagiarism, of any kind, is not be acceptable and will result in an automatic failure and possible additional disciplinary action.

See Duke Guidelines for plagiarism: <http://library.duke.edu/research/plagiarism>

### **Attendance Policy**

Attendance is mandatory.

### **Policy Related to Make-up Exams or Other Work**

***Attendance and Make-up Work*** – Attendance is mandatory. As noted above, class participation is factored into the grading policy for this course. Personal issues with respect to class attendance or fulfillment of course requirements will be handled on an individual basis, but only students with excused absences (e.g. serious illness) will be able to qualify for any make-up work for the course.